WHAT IS CLAIMED IS:

1. An image-reading device comprising:

a photoelectric converting element reading a first image from a subject copy;

a reference-white member functioning as a reference white used in a white-shading correction;

reading means for reading a second image from a constant range on a surface of said reference-white member by using said photoelectric converting element;

averaging means for dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

peak-value determining means for obtaining a peak value of said average values; and

white-shading correcting means for performing the white-shading correction to image data of said first image by using said peak value as white-shading data.

2. An image-reading device comprising:

a photoelectric converting element reading a first image from a subject copy;

a scanning optical system scanning said subject copy by exposing said subject copy to light so as to form said first image on said photoelectric converting element;

a reference-white plate functioning as a reference white used in a white-shading correction;

reading means for reading a second image from a constant range on a surface of said reference-white plate by using said photoelectric converting element;

averaging means for dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

peak-value determining means for obtaining a peak value of said average values; and

white-shading correcting means for performing the white-shading correction to image data of said first image by using said peak value as white-shading data.

3. An image-reading device comprising:

a subject-copy-conveying path conveying a subject copy;

a photoelectric converting element placed on said subject-copy-conveying path so as to read a first image from a surface of said subject copy;

a read roller placed opposite said photoelectric converting element with said subject-copy-conveying path therebetween so as to keep a distance constant between said surface of said subject copy and said photoelectric converting element by revolving, a surface of the read roller functioning as a reference white used in a white-shading correction;

reading means for reading a second image from a constant range on said surface of said read roller by using said photoelectric converting element;

averaging means for dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

peak-value determining means for obtaining a peak value of said average values; and

white-shading correcting means for performing the white-shading correction to image data of said first

image by using said peak value as white-shading data.

4. The image-reading device as claimed in claim 3, wherein said read roller has a reference-white read surface formed as a part of said surface thereof, the reference-white read surface having a center of curvature on a straight line crossing a central axis of said read roller orthogonally so that said reference-white read surface is formed as a curved surface located inside an outermost peripheral locus of said read roller.

5. The image-reading device as claimed in claim 4, wherein said constant range is at least one round on said surface of said read roller, and a length of each of said blocks in the sub-scanning direction is smaller than a length of said reference-white read surface.

6. The image-reading device as claimed in claim 3, wherein said constant range is at least one round on said surface of said read roller.

7. The image-reading device as claimed in claim 3, wherein said constant range is a range exceeding one round on said surface of said read roller; and

a length of each of said blocks in the sub-scanning direction is so set that, when said constant range is divided into said blocks, a fractional block is created in each round of said constant range.

8. The image-reading device as claimed in claim 1, wherein said averaging means obtains average values of image data of at least every second line of said lines in said blocks respectively.

9. The image-reading device as claimed in claim 1, wherein said averaging means obtains moving averages of image data of respective sets of lines in said second image, instead of obtaining the average values of the image data of said lines in said blocks respectively; and

said peak-value determining means obtains a peak value of said moving average values.

10. The image-reading device as claimed in claim 9, wherein said averaging means obtains the moving averages by moving first lines of the respective sets from each other by one line.

11. An image-forming device comprising:

an image-reading device including:

a photoelectric converting element reading a first image from a subject copy;

a reference-white member functioning as a

reference white used in a white-shading correction;

reading means for reading a second image from a constant range on a surface of said reference-white member by using said photoelectric converting element;

averaging means for dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

peak-value determining means for obtaining a peak value of said average values; and

white-shading correcting means for performing the white-shading correction to image data of said first image by using said peak value as white-shading data,

wherein an image is formed on a sheet according to the image data of said first image.

12. An image-forming device comprising:

an image-reading device including:

a photoelectric converting element reading a first image from a subject copy;

a scanning optical system scanning said

subject copy by exposing said subject copy to light so as to form said first image on said photoelectric converting element;

a reference-white plate functioning as a reference white used in a white-shading correction;

reading means for reading a second image from a constant range on a surface of said reference-white plate by using said photoelectric converting element;

averaging means for dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

peak-value determining means for obtaining a peak value of said average values; and

white-shading correcting means for performing the white-shading correction to image data of said first image by using said peak value as white-shading data,

wherein an image is formed on a sheet according to the image data of said first image.

13. An image-forming device comprising:

an image-reading device including:

a subject-copy-conveying path conveying a subject copy;

a photoelectric converting element placed on said subject-copy-conveying path so as to read a first image from a surface of said subject copy;

a read roller placed opposite said photoelectric converting element with said subject-copy-conveying path therebetween so as to keep a distance constant between said surface of said subject copy and said photoelectric converting element by revolving, a surface of the read roller functioning as a reference white used in a white-shading correction;

reading means for reading a second image from a constant range on said surface of said read roller by using said photoelectric converting element;

averaging means for dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

peak-value determining means for obtaining a peak value of said average values; and

white-shading correcting means for performing the white-shading correction to image data of said first

image by using said peak value as white-shading data,

wherein an image is formed on a sheet according to the image data of said first image.

14. An image-reading device comprising:

a photoelectric converting element reading a first image from a subject copy;

a reference-white member functioning as a reference white used in a white-shading correction;

an image-reading unit reading a second image from a constant range on a surface of said reference-white member by using said photoelectric converting element;

an average-value circuit dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

a peak-value circuit obtaining a peak value of said average values; and

a white-shading calculating circuit performing

the white-shading correction to image data of said first image by using said peak value as white-shading data.

15. An image-reading device comprising:

a photoelectric converting element reading a first image from a subject copy;

a scanning optical system scanning said subject copy by exposing said subject copy to light so as to form said first image on said photoelectric converting element;

a reference-white plate functioning as a reference white used in a white-shading correction;

an image-reading unit reading a second image from a constant range on a surface of said reference-white plate by using said photoelectric converting element;

an average-value circuit dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

a peak-value circuit obtaining a peak value of said average values; and

a white-shading calculating circuit performing the white-shading correction to image data of said first image by using said peak value as white-shading data.

16. An image-reading device comprising:

a subject-copy-conveying path conveying a subject copy;

a photoelectric converting element placed on said subject-copy-conveying path so as to read a first image from a surface of said subject copy;

a read roller placed opposite said photoelectric converting element with said subject-copy-conveying path therebetween so as to keep a distance constant between said surface of said subject copy and said photoelectric converting element by revolving, a surface of the read roller functioning as a reference white used in a white-shading correction;

an image-reading unit reading a second image from a constant range on said surface of said read roller by using said photoelectric converting element;

an average-value circuit dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

a peak-value circuit obtaining a peak value of said average values; and

a white-shading calculating circuit performing the white-shading correction to image data of said first image by using said peak value as white-shading data.

17. The image-reading device as claimed in claim 16, wherein said read roller has a reference-white read surface formed as a part of said surface thereof, the reference-white read surface having a center of curvature on a straight line crossing a central axis of said read roller orthogonally so that said reference-white read surface is formed as a curved surface located inside an outermost peripheral locus of said read roller.

18. The image-reading device as claimed in claim 17, wherein said constant range is at least one round on said surface of said read roller, and a length of each of said blocks in the sub-scanning direction is smaller than a length of said reference-white read surface.

19. The image-reading device as claimed in claim 16, wherein said constant range is at least one round on said surface of said read roller.

20. The image-reading device as claimed in claim 16, wherein said constant range is a range exceeding one round on said surface of said read roller; and

a length of each of said blocks in the sub-scanning direction is so set that, when said constant range is divided into said blocks, a fractional block is created in each round of said constant range.

21. The image-reading device as claimed in claim 14, wherein said average-value circuit obtains average values of image data of at least every second line of said lines in said blocks respectively.

22. The image-reading device as claimed in claim 14, wherein said average-value circuit obtains moving averages of image data of respective sets of lines in said second image, instead of obtaining the average values of the image data of said lines in said blocks respectively; and

said peak-value circuit obtains a peak value of said moving average values.

23. The image-reading device as claimed in claim 22, wherein said average-value circuit obtains the moving averages by moving first lines of the respective sets from each other by one line.

24. An image-forming device comprising:

an image-reading device including:

a photoelectric converting element reading a first image from a subject copy;

a reference-white member functioning as a reference white used in a white-shading correction;

an image-reading unit reading a second image from a constant range on a surface of said reference-white member by using said photoelectric converting element;

an average-value circuit dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

a peak-value circuit obtaining a peak value of said average values; and

a white-shading calculating circuit performing the white-shading correction to image data of said first image by using said peak value as white-shading data,

wherein an image is formed on a sheet according to the image data of said first image.

25. An image-forming device comprising:

an image-reading device including:

a photoelectric converting element reading a first image from a subject copy;

a scanning optical system scanning said subject copy by exposing said subject copy to light so as to form said first image on said photoelectric converting element;

a reference-white plate functioning as a reference white used in a white-shading correction;

an image-reading unit reading a second image from a constant range on a surface of said reference-white plate by using said photoelectric converting element;

an average-value circuit dividing image data of said second image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

a peak-value circuit obtaining a peak value of said average values; and

a white-shading calculating circuit performing the white-shading correction to image data of said first image by using said peak value as white-shading data,

wherein an image is formed on a sheet according to the image data of said first image.

26. An image-forming device comprising:

an image-reading device including:

a subject-copy-conveying path conveying a subject copy;

a photoelectric converting element placed on said subject-copy-conveying path so as to read a first image from a surface of said subject copy;

a read roller placed opposite said photoelectric converting element with said subject-copy-conveying path therebetween so as to keep a distance constant between said surface of said subject copy and said photoelectric converting element by revolving, a surface of the read roller functioning as a reference white used in a white-shading correction;

an image-reading unit reading a second image from a constant range on said surface of said read roller by using said photoelectric converting element;

an average-value circuit dividing image data of said second image into a plurality of blocks in a

sub-scanning direction so that each of the blocks includes a plurality of lines, and obtaining average values of image data of said lines in said blocks respectively;

a peak-value circuit obtaining a peak value of said average values; and

a white-shading calculating circuit performing the white-shading correction to image data of said first image by using said peak value as white-shading data,

wherein an image is formed on a sheet according to the image data of said first image.

27. A method of creating reference-white data comprising:

the reading step of reading an image from a constant range on a surface of a reference-white member by using a photoelectric converting element, the reference-white member functioning as a reference white used in a white-shading correction;

the averaging step of dividing image data of said image into a plurality of blocks in a sub-scanning direction so that each of the blocks includes a

plurality of lines, and obtaining average values of image data of said lines in said blocks respectively; and

the peak-value determining step of obtaining a peak value of said average values so as to create white-shading data.

28. The method as claimed in claim 27, wherein said reading step reads an image from a constant range on a surface of a revolving read roller as said reference-white member, the revolving read roller being placed opposite said photoelectric converting element, and said constant range is at least one round on said surface of said revolving read roller.

29. The method as claimed in claim 27, wherein said reading step reads an image from a constant range on a surface of a revolving read roller as said reference-white member, the revolving read roller being

placed opposite said photoelectric converting element, and the constant range being a range exceeding one round on said surface of said revolving read roller; and

said averaging step sets a length of each of said blocks in the sub-scanning direction so that, when said constant range is divided into said blocks, a fractional block is created in each round of said constant range.

30. The method as claimed in claim 27, wherein said reading step reads an image from a constant range on a surface of a revolving read roller as said reference-white member, the revolving read roller being placed opposite said photoelectric converting element and having a reference-white read surface formed as a part of said surface thereof, the reference-white read surface having a center of curvature on a straight line crossing a central axis of said revolving read roller orthogonally so that said reference-white read surface is formed as a curved surface located inside an outermost peripheral locus of said revolving read roller, and the constant range being at least one round on said

surface of said revolving read roller; and

said averaging step sets a length of each of said blocks in the sub-scanning direction smaller than a length of said reference-white read surface.

31. The method as claimed in claim 27, wherein said averaging step obtains average values of image data of at least every second line of said lines in said blocks respectively.

32. The method as claimed in claim 27, wherein said averaging step obtains moving averages of image data of respective sets of lines in said image, instead of obtaining the average values of the image data of said lines in said blocks respectively; and

said peak-value determining step obtains a peak value of said moving average values.

33. The method as claimed in claim 32, wherein said averaging step obtains the moving averages by moving first lines of the respective sets from each other by one line.